

sion, and is $3' 46''$ to the north of it. The approximate apparent place of the second star is "

R.A. $17^{\text{h}} 31^{\text{m}} 31^{\text{s}}$ N.P.D. $31^{\circ} 7' 10''$

Adopting Argelander's places, and correcting the observations for parallax, the following positions of the Comet have been deduced :

1847.	G. M. T. h m s	R. A. h m s	N. P. D. ° ' "
Dec. 1	8 46 10	18 6 1.03	31 55 34.7
14	9 26 30	18 59 7.83	33 41 14.1

ANNULAR ECLIPSE OF OCT. 8-9, 1847.

Captain Jacob writes that "the eclipse was observed at Bombay,

	Bombay M.T. h m s
Eclipse begins	1 7 36
Annulus forms.....	2 53 43
breaks	3 1 15.5
Eclipse ends.....	4 28 6

"From the place of observation the lighthouse bears S. $18^{\circ} 40'$ W., and Malabar Point flagstaff, S. $88^{\circ} 55'$ W.: these two are points in the trigonometrical survey; but I have not the survey data, with the exception of the latitude, $18^{\circ} 53' 40''$, and longitude, $72^{\circ} 51' 12''$ of the lighthouse. From these and a good map of Bombay, I get for my position, latitude, $18^{\circ} 56' 14''$, and longitude, $72^{\circ} 52' 07''$. The survey longitudes are believed to be erroneous in defect rather more than $1'$. The bearings were determined by measurement with a pocket sextant from the setting sun, and are probably within $2'$ of the truth. The times of the beginning and end of the eclipse are uncertain; the former to 4^{s} or 5^{s} , the eye having been withdrawn from the telescope at the moment; the latter to 2^{s} or 3^{s} from the sun's limb being tremulous. The times of the annular phase were considered exact, and the resulting longitude of the place comes out $\left\{ \begin{array}{l} 4^{\text{h}} 51^{\text{m}} 37^{\text{s}.5} \\ 37.8 \end{array} \right\}$ or $\left\{ \begin{array}{l} 72^{\circ} 54' 22'' \\ 27 \end{array} \right\}$ from these two times.

"The day was remarkably clear for the season, not a cloud having passed until near the end of the eclipse. Shortly before the annular phase, a faint ray or brush of light was seen issuing from the sun's northern cusp, which soon after extended in both directions as a tangent to the sun's limb: nothing of the kind was visible at the other cusp; possibly it arose from a passing film of vapour.

"When the annulus was about forming, the first thing noticed was the light running rapidly round on the south side, leaving a break of considerable extent, which seemed to arise from a projecting table-land in the moon. This was soon withdrawn, and at the same instant a kind of ligament, or stalk, of about $1'$ in breadth, was seen attaching the moon's limb to that of the sun, which was now quite clear, this small spot only excepted; the moon's limb was also perfectly well defined except in this point. The ligament

lasted for 3^s or 4^s,—perhaps more, elongating as the moon advanced, and was at length suddenly retracted into her circumference, the end appearing broken or toothed. At the breaking of the annulus the phenomenon was different; the moon's limb continued to approach that of the sun, till, when very close, a portion of the former, about 30° in extent, suddenly flowed over in dark lines, with bright spaces between, which almost immediately vanished, the whole appearance not lasting above 2^s. The first appearance was like that shewn in Pl. I. Fig. 10 of the Society's *Memoirs*, vol. x., and the last more resembled Figs. 1 and 3 of the same plate, but the lines were more numerous though they could not be counted. The telescope used was a 3½-foot by Dollond, with a power of 40.

"Not being in good health, I was unable to make any further observations of importance, except that the temperature of the air fell during the eclipse from 87° to 84°·5, and rose again to 85°·5 at the termination; and that, while the annulus lasted, the sun's rays had scarcely a perceptible effect on the thermometer.

"The time of the retraction of the ligament was noted as that of the formation of the annulus; and the time when the lines began to run across as the time of the end of the same. No light could be seen round the moon's limb when *off* the sun, either before or after the annulus."

BEADS IN ANNULAR ECLIPSES.

By the Rev. Professor Baden Powell.

The author considers the fact of the existence of the phenomenon in question as sufficiently well established, notwithstanding the equally admitted discrepancies in the accounts given of the appearance of the beads by different observers. Observers differ as to such points as the stationary or fluctuating character of the beads and the degree of their changes into threads; and they have sometimes been seen by one observer and not by another when the circumstances have been in some degree different. These discrepancies the author thinks due in some cases to the different coloured glasses employed, and in others to the loss of light, as, for example, when the images are projected on a screen. He thinks Mr. Caldecott's explanation of the tremulousness of the beads (as being due to atmospheric mirage) unsatisfactory, and is rather inclined with Mr. Airy to attribute it, in part, to the rapid decrease of the intensity of the sun's light near the borders.

The author considers the whole of the phenomena that have been observed to be due to two causes, viz. to the rapid decrease of light at the sun's edge, and to the acknowledged law of irradiation, that it increases with the increase of the intensity of the light.

This being allowed, he imagines that "any small opening or notch on the moon's edge will give rise to an enlarged image or patch of light by irradiation; and that this will be *much greater* as